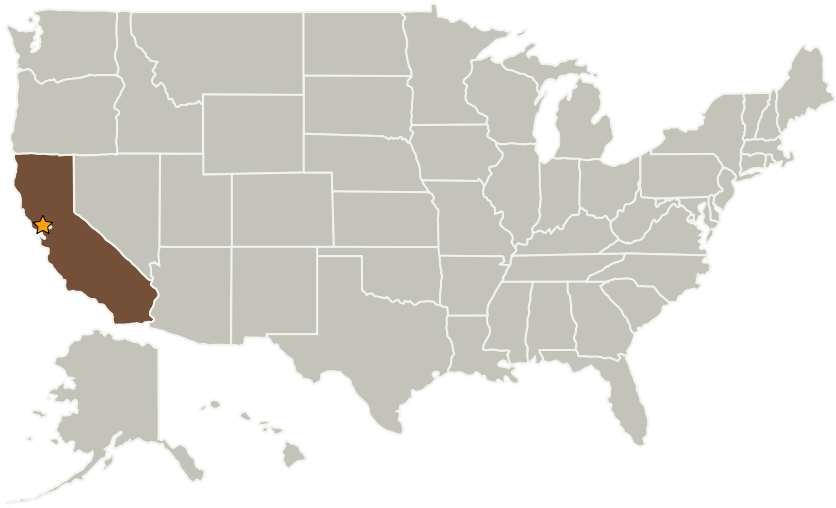
High Performance Programmable Transceiver, Phase I

Completed Technology Project (2008 - 2008)

Project Introduction

Space-to-ground communications have long been stuck in a prehistoric era of telemetry systems from the throughput and hardware availability perspective. From the throughput perspective, there has been an increased need in higher uplink and downlink rates for on-orbit operations. On the hardware side, long lead, single channel radios have been a programmatic nightmare to acquire and more and more problematic to operate given the frequency crowding. This study proposes a modern architecture based transceiver that comes to provide one integrated solution to all these issues. This proposal will design demonstrate a transceiver which can operate on both SGLS and USB uplinks and be fully frequency and mode programmable both during integration, and on the fly. In addition it will offer selectable channels for various mission profiles. Last but most important, it will use spectrally efficient modulation formats to enable high speed uplinks and support advanced communications protocols.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Ames Research Center (ARC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Ames Research Center(ARC)	Lead Organization	NASA Center	Moffett Field, California
Innoflight, Inc.	Supporting Organization	Industry Veteran-Owned Small Business (VOSB)	San Diego, California

Primary U.S. Work Locations
California

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Jeffrey Janicik

Technology Areas

Primary:

- TX05 Communications, Navigation, and Orbital Debris Tracking and Characterization Systems
  - TX05.1 Optical Communications
    - TX05.1.6 Optimetrics